

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims

Claims 1–54. (Cancelled)

55. (Currently amended) A method for selecting a placement of misfit dislocations, the method comprising the steps of:

forming a first layer portion over a substrate, the first layer having a first equilibrium lattice constant;

forming a regrowth layer over the first layer portion, the regrowth layer having a regrowth equilibrium lattice constant different from the first equilibrium lattice constant, wherein a plurality of misfit dislocations form at an interface between the first layer portion and the regrowth layer; and

forming a second layer over the regrowth layer[[; and]],

wherein the regrowth layer has selecting a thickness of the regrowth layer to defin[[e]]ing a distance between a top surface of the second layer and the misfit dislocations corresponding to the selected placement of the misfit dislocations, such that a device formed over the second layer is substantially free of misfit dislocations.

56. (Original) The method of claim 55, wherein the second layer is strained.

57. (Original) The method of claim 55, wherein a lattice mismatch between the first equilibrium lattice constant and the regrowth layer is less than about 0.04%.

58. (Original) The method of claim 57, wherein the thickness of the regrowth layer is less than about 450 nanometers.

59. (Original) The method of claim 57, wherein the first layer comprises a first germanium content, the regrowth layer comprises a second germanium content, and the

difference between the first germanium content and the second germanium content is less than about 1%.

60. (Original) The method of claim 55, wherein a lattice mismatch between the first equilibrium lattice constant and the regrowth layer is less than about 0.08%.

61. (Original) The method of claim 60, wherein the thickness of the regrowth layer is less than about 210 nanometers.

62. (Original) The method of claim 60, wherein the first layer comprises a first germanium content, the regrowth layer comprises a second germanium content, and the difference between the first germanium content and the second germanium content is less than about 2%.

63. (Original) The method of claim 55, wherein a lattice mismatch between the first equilibrium lattice constant and the regrowth layer is less than about 0.12%.

64. (Original) The method of claim 63, wherein the thickness of the regrowth layer is less than about 130 nanometers.

65. (Original) The method of claim 63, wherein the first layer comprises a first germanium content, the regrowth layer comprises a second germanium content, and the difference between the first germanium content and the second germanium content is less than about 3%.

66.-83. (Cancelled)

84. (New) The method of claim 55, wherein the second layer is strained and the device formed over the second layer has an off current less than approximately 10^{-8} Amperes/micrometer and a strained channel.